

1                   IN THE UNITED STATES DISTRICT COURT  
 2                   FOR THE NORTHERN DISTRICT OF OKLAHOMA

3           STATE OF OKLAHOMA, ex rel,                   )  
 4           W.A. DREW EDMONDSON, in his                )  
           capacity as ATTORNEY GENERAL               )  
 5           OF THE STATE OF OKLAHOMA,                )  
           et al.    )  
 6    )  
                           Plaintiffs,                    )  
 7    )  
           V.    )   No. 05-CV-329-GKF-SAJ  
 8    )  
   )  
 9           TYSON FOODS, INC., et al.,                 )  
   )  
 10    )  
                           Defendants.                    )

11  
 12  
 13                   REPORTER'S TRANSCRIPT OF PROCEEDINGS

14                   FEBRUARY 21, 2008

15                   PRELIMINARY INJUNCTION HEARING

16                   VOLUME III

17  
 18           BEFORE THE HONORABLE GREGORY K. FRIZZELL, Judge

19  
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CONTENTS

Page No.

WITNESSES CALLED ON BEHALF OF PLAINTIFFS:

GORDON VERNON JOHNSON

Further Cross-Examination by Mr. McDaniel.....	556
Redirect Examination by Mr. Nance.....	560
Recross-Examination by Mr. McDaniel.....	577

LOWELL MARK CANEDAY

1	(CONTENTS CONTINUED)	Page No.
2	Direct Examination by Mr. Lennington.....	585
3	Cross-Examination by Mr. McDaniel.....	601
4	Redirect Examination by Mr. Lennington.....	623
5	Recross-Examination by Mr. McDaniel.....	625
6	VALERIE J. HARWOOD	
7	Direct Examination by Mr. Page.....	627
8	Cross-Examination by Mr. Jorgensen.....	674
9	Redirect Examination by Mr. Page.....	755
10	Recross-Examination by Mr. Jorgensen.....	764
11	ROGER LEE OLSEN	
12	Direct Examination by Mr. Page.....	773
13	Cross-Examination by Mr. George.....	831

14 - - - - -

15 PROCEEDINGS

16 February 21, 2008

17 THE COURT: Mr. Bullock, Mr. George, and Ms.  
 18 Southerland and I spoke a second ago outside the courtroom with  
 19 regard to evidentiary matters. We've been going at such a  
 20 rapid pace and because there has been an agreement with regard  
 21 to exhibits on direct, there have been promises made to the  
 22 Court with respect to exhibits that have been used on cross  
 23 that they would be handled at the next break or at lunch that  
 24 has not been done. So the concern is that going forward, we  
 25 need to handle this matter very quickly or it presents real

1 THE COURT: Rather than discuss it any further, let's  
2 take the next witness. And I'll just tell you how much time --  
3 as you're running out of time, I'll tell you how much time  
4 we've got. And I'm going to start putting the stopwatch to it.  
5 Call your next witness.

6 MR. PAGE: Your Honor, the State calls Dr. Roger  
7 Olsen.

8 THE COURT: Dr. Olsen.

9 ROGER LEE OLSEN

10 Called as a witness on behalf of the plaintiffs, being first  
11 duly sworn, testified as follows:

12 THE COURT: State your name for the record, please.

13 THE WITNESS: Roger Lee Olsen.

14 THE COURT: Thank you, Mr. Page.

15 MR. PAGE: Thank you, Your Honor.

16 DIRECT EXAMINATION

17 BY MR. PAGE:

18 Q. Dr. Olsen, would you please summarize for the Court your  
19 education?

20 A. Yes, I have a bachelor of science degree in mineral  
21 engineering chemistry from the Colorado School of Mines in  
22 1972, that's essentially a chemistry degree. Then I have my  
23 PhD in geochemistry in 1979 also from the Colorado School of  
24 Mines.

25 Q. Dr. Olsen, what work experience do you have that's related

1 to your opinions in this case?

2 A. Essentially after I got out of school, all my work since I  
3 graduated has been related to evaluating contamination in the  
4 environment.

5 Q. Okay. And what companies have you worked for?

6 A. When I first got out of -- while I was in graduate school,  
7 I actually was an instructor in chemistry and geochemistry for  
8 three years at the Colorado School of Mines. After I left the  
9 Colorado Schools of Mines, I was with Rockwell International  
10 for a year as a senior research chemist. And I went to a  
11 consulting engineering company called D'Appolonia Consulting  
12 Engineers that was bought out by International Technology. I  
13 was there six years. For the last 23 years I've been with  
14 Camp, Dresser, McKee or CDM.

15 Q. Now, as part of your work in the environmental field, has  
16 that involved designing sampling plans?

17 A. Yes, it has.

18 Q. How many sampling plans have you supervised the design  
19 for?

20 A. At least a hundred that I've been the major author or  
21 major contributor to.

22 Q. And would you explain to the Court the approach you follow  
23 when you design a sampling?

24 A. Yes, I've developed a systematic approach that I use  
25 that's kind of a step-wise approach. And the first approach is

1 the vast majority of those had poultry waste.

2 Q. And did you do a similar analysis for groundwater?

3 A. Yes, I did.

4 Q. And what did you find?

5 A. Again, for those samples of groundwaters that had bacteria  
6 and for which I had enough parameters to do the PCA evaluation,  
7 67 percent of those samples had poultry waste in them.

8 Q. Again, what does that mean in plain terms?

9 A. It means that over two-thirds of those samples that had  
10 exceedances that I could evaluate had poultry waste  
11 contamination.

12 Q. Now, very briefly, Dr. Olsen, I want to finally look at  
13 Plaintiffs' Exhibit 454. And while you're getting that, I want  
14 to ask you a question. After you had your deposition taken in  
15 this case, did you discover that your statistical analysis was  
16 run with rejected data?

17 A. Yes, I just was doing some checking and of the actual  
18 results and looking at individual scores and individual  
19 contaminants, I noticed that there was some rejected data in  
20 the evaluations.

21 Q. How did that happen?

22 A. It wasn't in the data. It was in the database flagged  
23 right that we used, but we forgot to carry over those flags  
24 when we created subsets of data to do the PCA analysis on.

25 Q. So there was a problem with the query of the computer?

1 A. Yes.

2 Q. And how much of the data -- did you then run the  
3 evaluation with the proper data?

4 A. Yes, we did.

5 Q. How much of the data did you end up rejecting because it  
6 was rejected data?

7 A. There were, out of 14,700 pieces of data, that is actual  
8 analysis of contaminants that was in our PCA runs, we -- there  
9 were 677 rejected pieces of data out of the 14,700.

10 Q. How did that affect the number of samples you evaluated?

11 A. We had to drop 17 samples from the analysis. And those  
12 were all samples that were collected very early in the program  
13 and associated with some bad bacteria data that we had very  
14 early in the program. Essentially, we had to drop them because  
15 we no longer had the 20 out of the 25 parameters we needed.

16 Q. Was that the FoodProtech data was rejected?

17 A. That's right.

18 Q. And how many then total samples of what universe were  
19 dropped?

20 A. Again, we dropped 17. The analysis that I was just  
21 talking about and presented was based on 621 individual  
22 samples. We now have, without the rejected -- not including  
23 the rejected data, we have 604 samples.

24 Q. Okay. And did this rejection of the rejected data cause  
25 your opinions to change in any material way?



1 A. No, not at all.

2 Q. Would you briefly just explain what Exhibit 454 is?

3 A. 454 just shows the -- the runs with and without the  
4 rejected data. On the left is what we call the A, that's  
5 principal component 1, that's the chicken poultry signature  
6 that I've been testifying to. And then on the right is the  
7 same analysis done without the rejected data. You can see  
8 they're almost identical, all the high factors are similar --

9 MR. GEORGE: Your Honor.

10 THE COURT: Just one second, Doctor.

11 MR. GEORGE: I apologize for interrupting. I'm trying  
12 to recall where we drew the line but I believe that the Court's  
13 ruling was that the witness could certainly acknowledge that an  
14 error was made and state that it did not change his opinion,  
15 but now he's giving the substance of the new analysis in  
16 testimony.

17 THE COURT: Yeah, I expected some of this to come up  
18 in redirect and recross. So I think that the objection is well  
19 taken at this point in time. I understand where we are and the  
20 Doctor's testimony was consistent with what was told to the  
21 Court earlier about the rejected data. So Mr. Page.

22 MR. PAGE: I'll pass the witness, Your Honor.

23 THE COURT: Very well. Mr. George.

24 MR. GEORGE: Your Honor, I'm afraid if I get started,  
25 you won't want me to stop. It's going to be so exciting.

1 coliform bacteria in 2008 or 2009 if the Court enters the  
2 injunction your client requests?

3 A. Again, I've not been asked to answer that question.

4 Q. Sir, the sophisticated principal component analysis that  
5 you've discussed with the Court in your direct testimony will  
6 not tell us the relative contribution of sources in the  
7 watershed, will it?

8 A. Not as it is currently constructed. It will tell you the  
9 relative magnitude of those principal components.

10 Q. Well, sir, through your work in this case, you do not have  
11 a sufficient basis to offer a quantitative opinion, do you,  
12 sir, on the improvement of bacteria levels in the Illinois  
13 River Watershed if one source or potential source, poultry  
14 litter, is enjoined?

15 A. I have an opinion that it will vastly improve, but I  
16 haven't quantified that.

17 Q. You haven't quantified it, have you, sir?

18 A. That's right.

19 Q. You've done no statistical analysis to allow you to  
20 provide more detail on vastly improved; correct?

21 A. That's right.

22 Q. It's just your gut feeling; right?

23 A. No, sir, those principal components are very well defined.  
24 Those signatures are very well defined. The vast majority of  
25 impact is associated with principal component 1. So if you

1 Q. What are those variables?

2 A. Those are the contaminants that were analyzed for.

3 Q. And across the top there is a listing of factors. Do you  
4 see that?

5 A. Yes.

6 Q. And it appears to me it goes factor 1 through factor 5; is  
7 that right?

8 A. Yes.

9 Q. What are those factors?

10 A. Those are the principal components that we've been talking  
11 about, principal component 1 and principal component 2 that  
12 would correspond to factor 1 and factor 2 in this run.

13 Q. Okay. Now, beneath each factor is a long number that  
14 begins with a decimal; correct?

15 A. That's correct.

16 Q. And those numbers are loading values; is that correct?

17 A. These particular ones here are correlation coefficients.  
18 If you -- under the no rotation, they're actually directly  
19 proportional to the coefficients or the loadings that we  
20 actually use. So it's a number similar to this and the order  
21 would be the same but these aren't the numbers that are  
22 actually used in the final analysis of the component score.

23 Q. Now, Dr. Olsen, with respect to the factors, factor 1  
24 through 5, the computer does not identify those as poultry;  
25 correct?

1 A. No, that's right.

2 Q. This is not a situation where you feed a bunch of chemical  
3 data into a computer and it prints out the word poultry as a  
4 source; correct?

5 A. That's correct.

6 Q. Now, let's go back a little further in the documents to  
7 the percent variance page. Can you find, Dr. Olsen, in the  
8 materials I've handed you, the page that shows the percent  
9 variance? You're familiar with that term?

10 A. Yes.

11 Q. And we'll pull it up on the screen so that Your Honor can  
12 see it. Sir, now, the computer generates a value for each  
13 factor amongst this data that was analyzed in terms of percent  
14 variance explained; correct?

15 A. Yes.

16 Q. I think you told me in your deposition that this is what  
17 you look at in making a determination about chemical signature;  
18 correct?

19 A. I said that was one of the factors. You remember I said  
20 the overriding factors was to try to keep as many as parameters  
21 possible and still explain a maximum percent of the variance.

22 Q. Right, but percent variance, the higher the percentage,  
23 the more comfortable you are with the idea that the factor  
24 described explains something in the data; correct?

25 A. As long as you have enough parameters in there. So

1 there's those two things you have to weigh back and forth.

2 Q. Sir, how many parameters were on this run of your PCA  
3 analysis?

4 A. Nineteen.

5 Q. And again, sir, on this page of the output, the computer  
6 doesn't identify factor 1 as poultry and factor 2 as point  
7 sources. Those are your determinations; correct?

8 A. That's right.

9 Q. You, Roger Olsen, look at these statistics and you decided  
10 to call principal component 1 the poultry signature; correct?

11 A. No, as I explained yesterday, I did several things. I  
12 ordered the factor scores so it isn't these statistics I looked  
13 at. And I also compared the signature or all these variables  
14 to known waste compositions.

15 Q. But those are your determinations, not the software's  
16 determination; correct?

17 A. Yes, and that's exactly what I tried to say yesterday.

18 Q. And your determination as to whether factor 1 is a poultry  
19 signature or something else is one that you make using your own  
20 judgment; correct?

21 A. That's correct.

22 Q. You decided, did you not, sir, that principal component  
23 number 1 in your PCA runs represents a source of contamination  
24 as opposed to just normal variation in the data; correct?

25 A. That's correct.

1 Q. You decided that principal component 1 represents a single  
2 non-point source of contamination from poultry litter rather  
3 than a combination of different sources; correct?

4 A. That's correct.

5 Q. Sir, have you subjected those conclusions regarding your  
6 interpretation of these results as indicating a poultry  
7 signature to the formal peer review process to allow scientists  
8 other than those retained by the Motley Rice Law Firm who are  
9 experienced in interpreting PCA results to evaluate the  
10 soundness of your methods and conclusions?

11 A. You mean like to a journal or something like that?

12 Q. Yes, sir.

13 A. No, we haven't at this time. We plan to do that.

14 Q. Dr. Olsen, out of all the scientists in the world who have  
15 studied water quality in areas where poultry production occurs,  
16 you're the only one, aren't you, sir, who holds the opinion  
17 that the list of parameters that we saw in your direct  
18 examination constitute a poultry signature?

19 A. Well, that poultry signature is specific to this basin and  
20 I'm the only one besides other scientists in our company and  
21 one outside reviewer that's looked at this. So no other people  
22 outside the group or our scientific reviewer has seen this, so  
23 no one else has made that conclusion.

24 Q. You recall being asked these same questions in your  
25 deposition, sir?

1 demonstrative exhibit. It shows your list of parameters?

2 A. Yes.

3 Q. Sir, the only bacteria in your signature for poultry  
4 litter is E. coli, fecal coliforms, Enterococcus and total  
5 coliforms; correct?

6 A. That's correct.

7 Q. You know, do you not, sir, that all four types of those  
8 bacteria are found in cattle manure?

9 A. I don't know that for sure but I suppose they are, yes.

10 Q. You know, do you not, sir, that all four of those types of  
11 bacteria are found in human waste deposited in septic tanks?

12 A. Probably so.

13 Q. You know, do you not, sir, that all four of those bacteria  
14 are included in the feces of wildlife that live in the Illinois  
15 River Watershed?

16 A. I do not know that for sure.

17 Q. You don't know that?

18 A. No. I'm not a bacteria expert.

19 Q. All right. Dr. Olsen, does your signature allow you to  
20 identify -- strike that. Let me approach it this way.

21 Dr. Olsen, your signature does not allow you to identify any  
22 farm contracting with Tyson Foods, George's or any other  
23 defendant represented in this courtroom as a source of any area  
24 of water contamination in the Illinois River, does it?

25 A. You mean does it allow me to identify a specific farm?

1 Q. A specific farm under contract with one of the defendants.

2 A. No, I've not been asked to do that.

3 Q. Does it allow you to identify a specific defendant?

4 A. No, I've not been asked to do that.

5 Q. Going to Demonstrative Exhibit 461, State's Demonstrative  
6 Exhibit 461. Dr. Olsen, you prepared this map; correct?

7 A. That's correct.

8 Q. And I didn't quite follow this, so I want to discuss it  
9 with you. In your direct examination, there was some attention  
10 drawn to the green dots outside of the Illinois River  
11 Watershed.

12 A. Yes, sir.

13 Q. Do you recall that?

14 A. Yes, sir.

15 Q. And I think you described those as control areas; is that  
16 right?

17 A. There's three green dots. There's one right above the  
18 basin, that's Spring Creek. And there's two below the basin,  
19 far below the basin, not that far, kind of on the county line  
20 there that are Little Lee Creek. And there's a green dot that  
21 can't be shown here because it's Dry Creek, it's in the Buffalo  
22 Creek area. Those are the reference areas for surface waters.  
23 Those other three happen to be springs that were collected. I  
24 didn't really associate those were reference areas. Again,  
25 they were just trying to collect all the springs. So those are